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## Case Report

## Isolated tuberculosis of scapula in a young adult

Sanjay A. Jagtap, Dhiraj V. Sonawane, Akash A. Saraogi \*

Orthopaedics Department, G.M.C. &amp; Sir JJ. Group of Hospitals, India

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## ABSTRACT

Tuberculosis (TB) of the scapula is a very rare presentation among tuberculosis of bones and joints. The following case report describes a rare case of tuberculosis involving the inferior angle of the scapula in a young, immune-competent adult presenting with pain, swelling and an osteolytic lesion over the inferior angle of the scapula with a cold abscess. The diagnosis was confirmed on histopathology and culture, with Magnetic Resonance Imaging (MRI) acting as an adjunct to an early diagnosis. The patient was managed successfully with surgical debridement and a four-drug anti-tuberculous regimen.

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## Introduction

The World Health Organization (WHO) South-East Asia Region registered an estimated 5 million prevalent cases of tuberculosis (TB) in 2010 [1]. The region carries about 40% of the global burden of TB [1]. India alone accounts for more than 25% of the world's incident cases [1]. Skeletal TB accounts for 1–5% of all TB cases and 15% of extra-pulmonary TB cases, and the spine is affected in 50% [2] of the cases. Pure tuberculous osteomyelitis in flat bones is rare. To the best of the research's findings, only 12 cases of TB scapula have been reported to date [3]. An appropriate knowledge and high index of suspiciousness can help prevent misdiagnosis, as well as reduce morbidity associated with TB scapula.

## Case history

A 25-year-old male, car driver by profession, presented with swelling and pain in the lower right scapular region that be-

gan four months prior. The swelling, which was initially small in size, was gradually progressing. It was associated with dull pain aggravated by shoulder movements, but did not restrict the range of motion. There was a history of weight loss of about 3–4 kg in the past 6 months. There was no history of trauma, fever, loss of appetite, or chronic cough. There was no past family history of TB.

Upon examination, the swelling was found to be 10 × 7 cm in size located over the inferior aspect of the right scapula (Fig. 1). On palpation, it was determined to be soft, cystic, globular and minimally tender. Fluctuation was positive and trans-illumination was negative. There was no local rise of temperature or erythema. Skin over the swelling was normal and free from underlying swelling. There was no discharging sinus. On overhead abduction of the right upper limb, swelling was moving with the scapula. A well-informed written consent was taken from the patient in his language for further investigations and treatment as per ethical considerations.

\* Corresponding author. Address: A-103, 104, Veena Nagar, Near Chincholi Phatak, S. V. Road, Malad (West), Mumbai 400064, Maharashtra, India.

E-mail address: [akashitisme@yahoo.com](mailto:akashitisme@yahoo.com) (A.A. Saraogi).

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**Fig. 1 – Clinical photograph showing site of involvement, i.e., inferior aspect of right scapula.**

Laboratory investigations revealed the haemoglobin level to be 14.3 g%. The white blood cell count was 10,500 with normal differential leukocyte count. Erythrocyte Sedimentation Rate (ESR) was 45 mm/hr. The patient was Mantoux-positive and HIV-negative. The plain anteroposterior radiograph of the right scapula was suggestive of radiolucent eccentric, well-circumscribed osteolytic lesion of approximately 1.5 × 8 mm at the inferior angle of the scapula (Fig. 2) with



**Fig. 2 – Anteroposterior radiograph of right scapula showing eccentric, radiolucent 1.5 × 8 mm osteolytic lesion.**

minimal involvement of surrounding soft tissue. A radiograph of the chest showed no involvement of lung parenchyma. Magnetic Resonance Imaging (MRI) showed an erosive lesion involving the inferior angle of the scapula communicating with a large multiseptated abscess between the teres major and the latissimus dorsi measuring 5.9 × 8.4 × 6.9 cm (Fig. 3) with a few prominent right axillary lymphadenopathy.

### **Surgical drainage**

Surgical drainage of this abscess and debridement was performed (Fig. 4). The histopathology of the material obtained showed granulomatous lesions in the form of Langerhan's giant cells with epithelioid cells and lymphocytes surrounding the caseous material suggesting TB (Fig. 4). Ziehl-Neelsen stain was negative for the presence of acid-fast bacilli. Culture for pyogenic bacteria was negative. TB culture confirmed the presence of *Mycobacterium tuberculosis*, which was sensitive to rifampicin, isoniazid, ethambutol, and pyrazinamide.

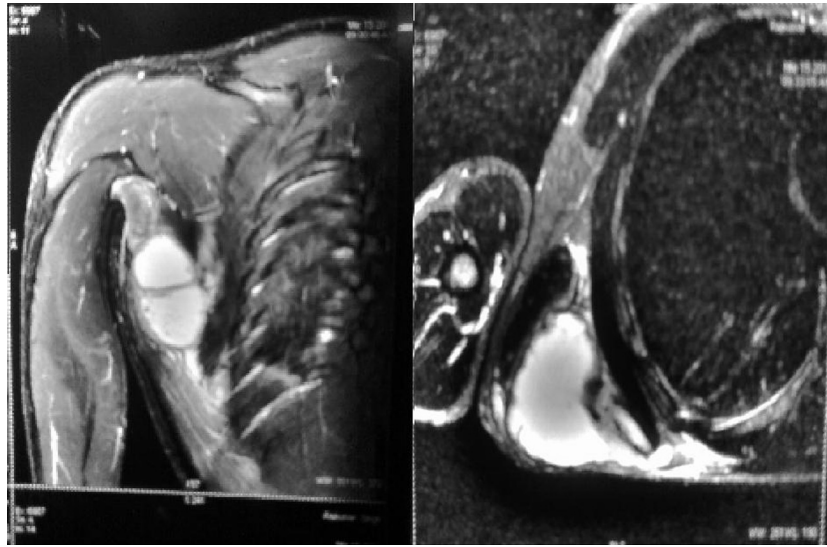
The patient was put on a daily anti-tubercular regimen (AKT-4) C. Rifampicin 450 mg orally, T. Isoniazid 300 mg orally, T. Ethambutol 800 mg and T. Pyrazinamide 1.5 g orally and supplemented with pyridoxine 100 mg daily orally. Periodic monitoring of liver and renal functions was done. The four-drug AKT was given for the first three months followed by rifampicin, isoniazid with pyridoxine and hepatoprotective drugs for an additional 9 months. ESR at the end of 3 months was 26 mm/hr, and at 12 months was 10 mm/hr. Recent follow-up at 2 years revealed the patient was completely asymptomatic.

### **Discussion**

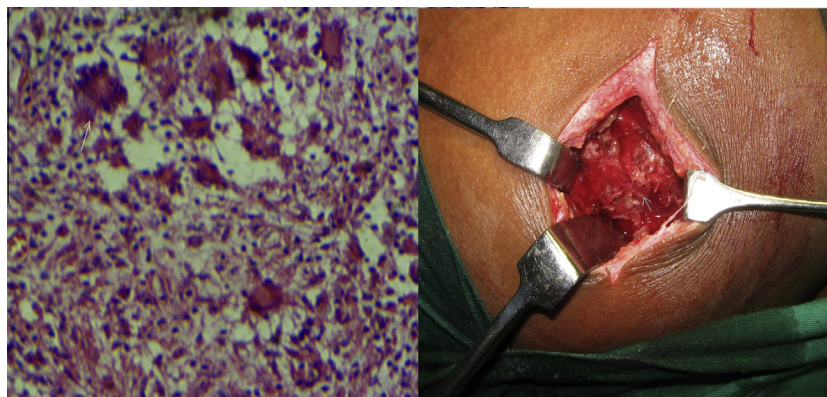
TB of bones and joints, though uncommon, is associated with more significant morbidity than mortality. It is simply because of the lack of a timely diagnosis more so than the pathogenicity of the disease itself. Musculoskeletal TB arises from haematogenous seeding of the bacilli soon after the initial pulmonary infection. It starts as osteomyelitis in the growth plates of bones, where the blood supply is best, and then spreads locally into the joint spaces [4]. Less commonly, it can occur by spreading through the lymphatic system [5]. The predisposing factors are malnutrition – mainly of protein – environmental conditions and living standards, such as poor sanitation and over-crowded housing, repeated pregnancies and lactation in women, diabetes mellitus, and acquired immunodeficiency syndrome [6]. However, an immune-competent individual is not immune to the development of uncommon forms of osteoarticular TB.

Bone and joint TB is encountered in any age group [7,8]. No bone is immune from involvement with TB, and arthritis is mono-articular in 90% of cases. The most common location in childhood is the spine, accounting for 60–70% of cases [7].

A patient with scapula TB may present with symptoms of swelling, pain, with or without abscess formation, and joint stiffness. Local increased temperature, redness, and fever are usually not seen. A late diagnosis in the form of sinus formation draining cold abscess may not be infrequent [9]. The differentials for clinical features include: eosinophilic



**Fig. 3 – Magnetic Resonance Imaging: T2 weighted image showing the abscess dimensions in coronal and axial images. Multi-septate abscess measuring 5.9 × 8.4 × 6.9 cm.**



**Fig. 4 – Histopathology showing granuloma formation with Langerhan's giant cell and caseous necrosis (left). Intra-op osteolytic lesion over inferior angle of scapula (right).**

granuloma, sarcoidosis, chordoma, fungal infections, metastases and pyogenic osteomyelitis [10].

Diagnosis is achieved by being vigilant, clinically towards localised symptoms without systemic involvement, without any obvious features of pyogenic infection. Elevated ESR and positive Mantoux test may assist towards the diagnosis. Radiological features, though not pathognomonic in early stages, will delineate osteolytic areas with minimal sclerosis with no sequestrum formation. MRI acts as a great tool in delineating the pathology, assessing bone and soft tissue involvement, and abscess formation. Biopsy for histopathological examination (showing granulomatous reaction), TB culture (gold standard), BACTEC and newer methods, including the use of polymerase chain reaction (PCR) on obtained tissue biopsies, appear promising in the early diagnosis of TB osteomyelitis. Mycobacteria might be identified from sinus-track culture, whereas operative culture, histopathological and clinical examination could fail to confirm the diagnosis of TB [9]. Thus, sinus-track specimen should not be omitted as a concern of contaminants [9].

Operative indication of TB scapula may include intractable pain, large abscess formation, neurological deficit (e.g. thoracodorsal nerve involvement), and cases not responding to initial line of medical therapy. However, most patients respond dramatically to the start of an anti-tuberculous regimen, and medical management remains the mainstay in management of this disease.

This case highlights an occurrence of TB in an uncommon site, with no constitutional symptoms, in an immune competent individual. It also depicts the importance of surgical intervention at an appropriate stage for reducing the morbidity and complications associated with the disease. Surgical treatment acts only as an adjunct to the WHO recommended anti-tuberculous regimen. The WHO regimen serves to obtain an excellent response to tuberculous involvement of this type. An early diagnosis and treatment in the form of a daily 4-drug AKT regimen for 1 year serves the purpose in treatment of osteoarticular TB in most cases. Awareness and education of personal hygiene, environmental cleanliness and nutrition may aid in prevention of the disease.



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